Lesson 3-1 Scatterplots

A ***scatterplot*** is often used to study relationships among variables. A scatterplot shows the relationship between two quantitative variables on the same individuals.

# When examining two variables:

* Start with a graph.
* Look for the overall pattern – *Direction,* *Form*, and *Strength* -- and deviations – *Outliers* -- from the pattern.
* Add numerical descriptions of the data.
* If possible, briefly describe the overall pattern.

If the two variables are the result of a study or experiment, the ***response variable*** measures the outcome and the ***explanatory variable*** attempts to explain the observed outcomes. If you don’t have set values of either variable, there may or may not be a response variable. Indicating that one variable is the explanatory variable and the response variable does not actually mean that one causes changes in the other. Often the explanatory variable is called the ***independent variable*** and the response variable is called the ***dependent variable***. When making a scatterplot, always plot the explanatory variable, if there is one, on the x-axis and the response variable on the y-axis. You can add categorical variables to the scatterplot by using different colors or symbols.

***Direction***

If there is a clear direction, the association is called ***positive*** if the high values of both variables tend to occur together or ***negative*** is the high values of one variable tend to occur with the low values of the other variable.

***Form***

Look for ***linear*** relationships, ***curved*** relationships, or ***clusters*** of data.

***Strength***

Examine how closely the points lie *in a line*.

# What Can Go Wrong?

* Make sure you use the x axis for the explanatory variable, if there is one.
* Don’t assume that just because you assign one variable as the explanatory variable it really causes a change in the other variable.